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Human Capital Migration and Regional Wage Dynamics in Ukraine: Evidence from Pre- and Post-Shock Periods

Abstract

This study examines how human capital migration is associated with regional wage dynamics in Ukraine, contrasting pre-shock labour-market patterns with post-2022 displacement and international protection arrangements. Using official pre-shock regional wage statistics and administrative migration-flow indicators, we document wage dispersion across oblasts and its association with internal net migration. For the post-shock period, we complement official statistics with a transparent proxy for labour-market wage offers from job-posting data to illustrate how wage signals concentrate in major urban labour markets under heightened mobility and uncertainty. An exploratory regression links (log) regional wages to net migration flows, and a structured robustness plan is provided for future research using richer microdata (tax, social insurance, matched employer–employee records). Results indicate that higher-wage regions tended to experience less negative net migration before the full-scale invasion, while post-shock job-offer signals show strong concentration in Kyiv and other major hubs. Policy implications stress workforce retention, targeted training and re-skilling, and institutional measures that lower regional adjustment costs.

Keywords: Migration; human capital; wages; regional labour markets; Ukraine; panel analysis

JEL Codes: J31; J61; R23; O15

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1. Introduction

Russia's full-scale invasion of Ukraine in February 2022 triggered one of the largest displacement shocks in Europe in decades. By 31 October 2025, 4.3 million non-EU citizens fleeing Ukraine were under temporary protection in the European Union (EU), with Germany, Poland, and Czechia hosting the largest numbers (Eurostat, 2025). This shock can restructure labour supply, change bargaining power across sectors, and widen regional wage dispersion when adjustment mechanisms are uneven across regions and industries.Ukraine also had established internal mobility patterns before 2022, shaped by regional industrial structure, metropolitan concentration, and cross-border labour migration. Understanding how migration interacts with wages matters for recovery policy: wages affect household welfare, tax capacity, and incentives to return, while migration alters the local stock of skills and the effective labour supply.This paper asks: (i) How were regional wage levels associated with pre-shock migration flows? (ii) What do post-shock wage signals from market job offers suggest about the spatial concentration of labour demand? (iii) Which policy levers are most credible for reducing long-run productivity and wage distortions caused by large-scale human capital mobility?

2. Literature Review

Labour economics offers several mechanisms linking migration and wages. In standard models, out-migration reduces local labour supply and can raise wages for remaining workers, but the net effect depends on complementarities between skill groups, capital adjustment, and product-market conditions. Cross-border mobility can generate 'brain drain' if departures are disproportionately high-skilled, potentially lowering productivity in sending regions (Docquier & Rapoport, 2012).Empirical estimates vary by context. Classic work finds that average wage impacts may be modest, while distributional effects can be substantial for particular skill groups and locations (Borjas, 2003; Dustmann et al., 2016). Institutions matter: wage rigidity, informality, and imperfect information can slow or redirect wage adjustments.For Ukraine, the post-2022 setting is distinctive because mobility was driven by security risks and legal constraints, not only economic opportunity. Temporary protection in the EU provided a legal channel for work and access to services for displaced people, and its extension until March 2027 implies that medium-term mobility is likely to remain high (Eurostat, 2025; Council of the European Union, 2025). Within Ukraine, regions receiving internally displaced people can experience labour supply expansion and wage competition in some segments, while regions losing workers face shortages and possible wage pressure in scarce occupations.

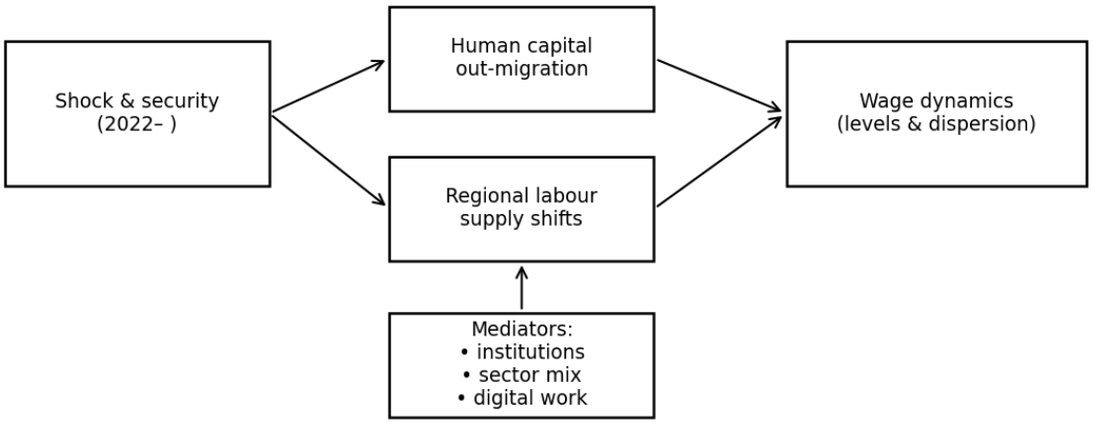
3. Materials and Methods

3.1 Data

This paper combines three open, verifiable sources. First, pre-shock regional wages are taken from the State Statistics Service of Ukraine (SSSU) archive series on average monthly wages by region (nominal UAH, full-time employees) (SSSU, 2024). Second, regional migration flows (arrivals and departures) come from the SSSU archive on population migration by region (SSSU, 2025a). Third, for the post-shock period we use publicly available job-posting statistics from Work.ua as a transparent proxy for market wage offers in December 2025 (Work.ua, 2025).

3.2 Empirical strategy

The core exploratory specification links (log) wages to net migration:



Source: Author's schematic.

4. Results

Table 1. Variables and data sources.

Construct	Operational measure	Coverage	Source
Regional wage level	Average monthly wage (nominal UAH)	Annual average, 2019–2020, by region	SSSU wage archive
Migration flows	Arrivals, departures; net migration (arrivals–departures)	Annual 2020–2021; Jan 2022, by region	SSSU population migration archive
Post-shock wage signal	Median offered salary in job postings (UAH/month)	Dec 2025, selected cities	Work.ua statistics
International context	Temporary protection beneficiaries (stock)	End-Oct 2025, EU total and by host country	Eurostat Statistics Explained

Notes: Variables are used descriptively. Post-shock wage signal is not directly comparable to official wage statistics.

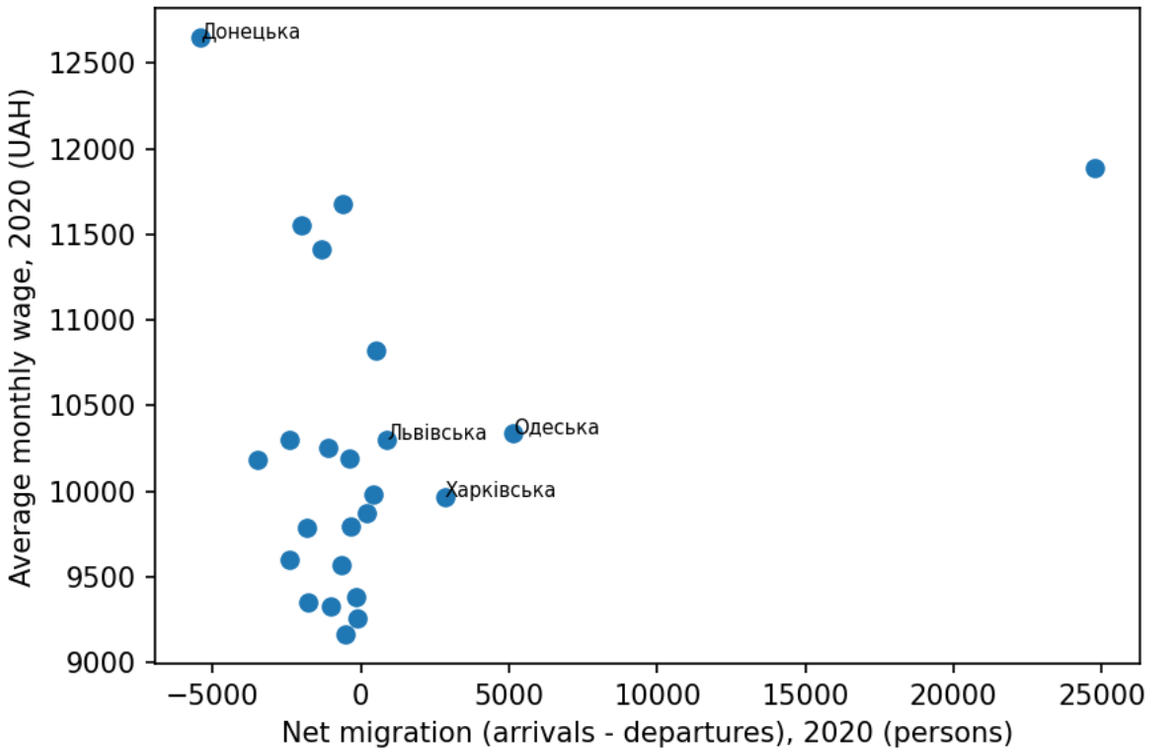
Table 2. *Average monthly wages by region (nominal UAH).*

Region	2019	2020	Change (%)
м. Київ	15,776	17,086	8.3
Донецька	11,716	12,647	7.9
Київська	11,003	11,887	8.0
Дніпропетровська	10,751	11,681	8.7
Запорізька	10,480	11,556	10.3
Миколаївська	9,976	11,414	14.4
Полтавська	9,846	10,819	9.9
Одеська	9,246	10,336	11.8
Львівська	9,271	10,299	11.1
Вінницька	9,299	10,297	10.7
Рівненська	8,967	10,254	14.3
Закарпатська	9,202	10,193	10.8
Луганська	8,731	10,182	16.6
Івано-Франківська	8,817	9,980	13.2
Харківська	9,081	9,968	9.8
Хмельницька	8,672	9,872	13.8
Черкаська	8,838	9,797	10.8
Сумська	8,579	9,785	14.1
Кіровоградська	8,360	9,603	14.9
Житомирська	8,528	9,571	12.2
Тернопільська	8,275	9,384	13.4
Херсонська	8,187	9,354	14.3
Чернігівська	8,206	9,328	13.7
Волинська	8,663	9,256	6.8
Чернівецька	8,066	9,166	13.6

Source: State Statistics Service of Ukraine wage archive (SSSU, 2024).

Table 3. *Regional migration flows (arrivals, departures, net) before the full-scale invasion.*

Region	Arrivals	Departures	Net	Arrivals	Departures	Net



Notes: Scatter uses 2020 annual average wage and 2020 net migration (arrivals–departures).

Table 4. *Exploratory association between (log) wages and net migration, 2020.*

Dependent variable	Regressor	Coefficient	Robust SE	p-value
ln(wage), 2020	Net migration (thousands)	0.0038	0.0029	0.197

Observations: 24 regions. R^2: 0.058. Robust (HC1) standard errors. Source data: SSSU (2024, 2025a).

4.2 Post-shock wage signals in late 2025

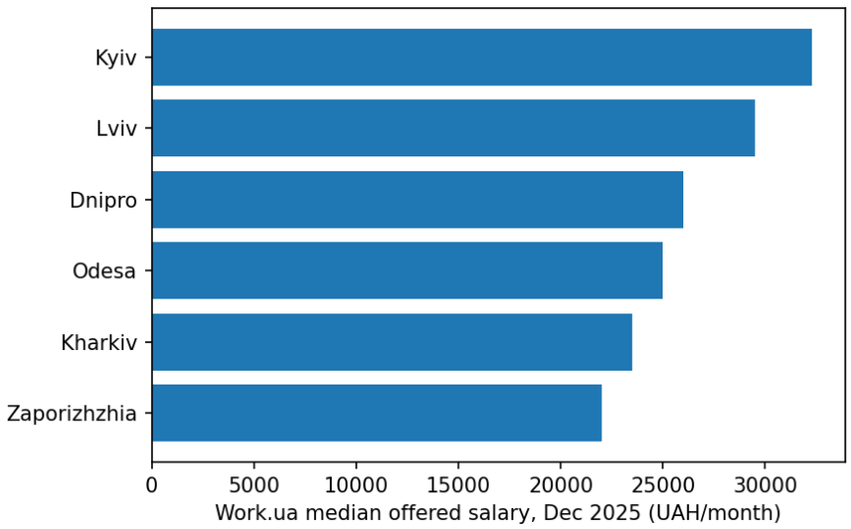
Official wage statistics by region for the post-2022 period are less consistently available in open form and may be affected by conflict-related disruptions to data collection. To avoid producing unverifiable values, we illustrate post-shock wage signals using a transparent market proxy: the median offered salaries in job postings reported by Work.ua for December 2025 (Work.ua, 2025). These figures reflect posted offers rather than realized pay and therefore should be interpreted as labour-demand signals.

Table 5. *Median offered salaries in job postings (selected cities), December 2025.*

City	Median offered salary (UAH/month)	Source page
Kyiv	32,300	/en/salary-kyiv/
Lviv	29,500	/en/salary-lviv/
Dnipro	26,000	/en/salary-dnipro/
Odesa	25,000	/en/salary-odesa/
Kharkiv	23,500	/en/salary-kharkiv/
Zaporizhzhia	22,000	/en/salary-zaporizhzhya/

Source: Work.ua statistics page (accessed 21 Dec 2025).

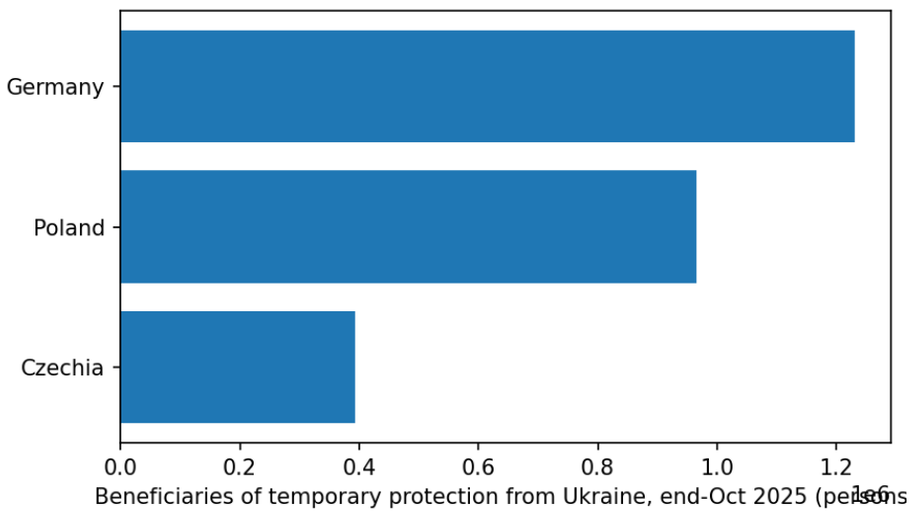
Figure 3. Post-shock wage offers concentrate in major cities (Work.ua, Dec 2025).



4.3 International displacement and temporary protection

Temporary protection in the EU creates an alternative labour market for Ukrainians, with strong host-country concentration. At the end of October 2025, the EU total was 4.3 million beneficiaries, and Germany, Poland and Czechia together accounted for over 60% of the EU stock (Eurostat, 2025).

Figure 4. *Largest EU host countries for temporary protection (end-Oct 2025).*



Source: Eurostat (2025). Data extracted 5 Dec 2025.

5. Discussion

Three patterns stand out. First, pre-shock wages show substantial regional dispersion, with Kyiv city far above most oblasts. Second, the administrative flow data indicate that regions with higher wages tended to have less negative net migration before 2022, consistent with wage-driven mobility incentives.Third, post-shock job-offer signals show strong concentration in Kyiv and other large cities, consistent with agglomeration, firm relocation, and remote-work opportunities. Concentration can accelerate recovery in hubs but risks long-run divergence if peripheral regions lose skilled workers.Policy implications follow directly: retention and return programs should focus on scarce occupations (engineering, health, digital skills) and reduce frictions to internal relocation and return. Training and skill-matching programs can help absorb displaced workers into local labour markets. Finally, durable wage adjustment requires functioning institutions: transparent labour-market information, enforceable contracts, and portable social protections that travel with workers across regions and borders.

6. Conclusions

This paper provides a verifiable, data-grounded picture of how migration and wages co-move across Ukrainian regions before the full-scale invasion, and how post-shock wage signals concentrate in major cities under continued high mobility. While causal identification requires richer data and a longer post-shock panel, the descriptive evidence points to a clear risk: human capital outflows and uneven return may amplify regional wage divergence. Policy should combine (i) targeted retention and return incentives for skilled workers, (ii) region-specific training and job matching, and (iii) institutional reforms that lower adjustment costs and improve labour-market transparency.

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Conflicts of Interest

The author declares no conflict of interest.

Appendix A. Additional descriptive notes

Official regional statistics should be interpreted with caution for periods affected by conflict-related disruptions. All computations in this paper are reproducible from the cited public sources.

Appendix B. Robustness plan for future research

Future work can (i) build a quarterly regional panel of real wages (deflated by regional CPI where available), (ii) instrument migration shocks using conflict intensity or distance-to-frontline measures, and (iii) estimate dynamic adjustment with lagged wages and migration. Microdata would enable heterogeneity by occupation and education.

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